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PREFACE AND TABLE OF CONTENTS OF DR F. HUND'S
"ATOMIC AND QUANTUM THEORY"

[Comment: Dr Friedrich Hund was born in 1896. In 1927, while an assistant at the University of Goettingen, he was invited as associate professor to Rostock University and was promoted to full professor the next year. From 1929 to 1946 he occupied the chair of mathematical physics at the University of Leipzig; from 1946 to the present he has lectured on theoretical physics at the University of Jena. He is a well-known specialist in solid-state and nuclear physics. In 1951 he completed his fifth and last volume of a series entitled "Einfuehrung in die theoretische Physik" (Introduction to Theoretical Physics). This fifth volume, "Atom- und Quantentheorie" (Atomic and Quantum Theory), was published in Leipzig, 1951, 314 pages.

The preface and table of contents of the book follow.]

Preface

With this fifth volume entitled "Atomic and Quantum Theory," the "Introduction to Theoretical Physics" should be considered as terminated. The study has been limited to that of the atom, the quantum theory, and the science of the building-up of matter. The purpose was to provide subject matter for the physicist who is not a specialist in quantum theory and in the building-up of matter.

Therefore, the statements of this volume should lead to a general conception of quantum mechanics, well founded and suitable for further applications; with this aim in mind, Schroedinger's equation was selected. We understand, therefore, by quantum theory the totality of concepts and statements expressing the limitations of the classical particle viewpoint and that of a distinct field, as far as particle and field are parts of matter. For many applications and, in particular, for the atomic structure, full knowledge of quantum theory is not required. The applications (spectra, periodic system of elements) are represented in Rutherford's atomic model, modified by the immaterial transitions of the correspondence principle.

Where systematic representation and accuracy of argumentation in the concept of a beginning physicist seem to me controversial, I did my best in trying to grasp the aims of the beginner. I also intended to write an introduction to more competent and better representations of the quantum theory. Among those published soon after the clarification of theoretical quantum concepts I may cite the following books: W. Heisenberg, "Die physikalischen Prinzipien der Quantentheorie" (The Physical Principles of the Quantum Theory), Leipzig, 1930 -- still a most valuable work on the duality of wave and corpuscle; and the book by P. A. M. Dirac, "Die Prinzipien der Quantenmechanik" (Principles of Quantum Mechanics), Leipzig, 1930 -- an accurate and comprehensive study. A more recent successful

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attempt to combine clarity and comprehensiveness is H. A. Kramer's book "Die Grundlagen der Quantentheorie und Quantentheorie des Elektrons und der Strahlung" (Fundamentals of the Quantum Theory and the Quantum Theory of the Electron and of Radiation), Leipzig, 1938. Finally, the valuable and impeccable introduction into the mathematical mastery of the quantum mechanical problems: A. Sommerfeld, "Atombau und Spektrallinien" (Atomic Structure and Spectral Lines), Vol 2, Braunschweig, 1939.

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